



IDEM's Surface Water Quality Assessment Program

Environmental Toxicology and Chemistry Section

Program Objective

The Environmental Toxicology and Chemistry Section (ETCS) provides technical and liaison services within the Office of Water Management (OWM) in the areas of general and environmental toxicology, toxicity evaluation and risk assessment analysis, quality assurance of environmental sampling and analytical data results from analysis of environmental samples. The Section as part of the Assessment Branch Water Quality Monitoring activities, also leads efforts on developing TMDLs (Total Maximum Daily Loads) for Impaired Waterbodies that are on the 303(d) List. Broadly speaking, the ETCS staff provides information regarding the current and future impact of various pollutants and toxic substances on aquatic life, human health and the environment. Quality assurance support is provided to various programs within the **Assessment Branch** and across OWM for analytical data collected to meet individual project objectives. The main mission and objectives of the ETCS are:

- ! Assure that State Water Quality Criteria (WQC) or standards are implemented through the of NPDES (National Pollutant Discharge Elimination System) permit limit compliance monitoring program to improve and maintain surface water quality and its designated uses. Regular and timely review of the pollutant monitoring data and toxicity biomonitoring reports submitted by the regulated community serves as a basis to accomplish this goal.
- ! Assess the potential for exposure and toxic effects of chemical pollutants or toxicants from environmental media (water, soil, sediments and fish tissue) and their release into the environment through point or nonpoint source discharges. This information is made available to management and other customers, both within and outside IDEM, to prevent further environmental pollution and improve both water quality and the environment.
- ! The TMDL development is required of the impaired waterbodies that do not meet the water quality standards. The TMDL work involves characterization and identification of the target parameters and their risk to human health or aquatic life, identifying sources of pollution and quantification of loading, and calculation of Load Allocation (LA) and Waste Load Allocation (WLA) for the non-point and point sources. Implementation of TMDL through point and non-point source programs is expected to achieve an overall improvement in water quality of an impaired waterbody in a particular Watershed.
- ! Provide quality assurance support to Assessment Branch data collection efforts and analysis of environmental samples (water, sediments, and fish tissue) through compliance with the integrated Quality Assurance Project Plan (QAPP) prepared for surface water toxics monitoring programs. This work is performed not only to ascertain quality and accuracy of environmental data collected but to ensure that the analytical data gathered are of high quality and can be used with confidence in assessing surface water quality.

Program Participants

This program is operated through the sampling efforts of the Office of Water Management's Assessment Branch (Biological Studies and Survey sections), the Permit Branch (NPDES program), and the Operations Branch (Data Management Section). Also coordinates with the Indiana Department of Health (ISDH) Environmental Lab and Contract Laboratories for laboratory analysis of environmental samples, data collection and data review process.

Program Description

Media:	Surface Water: rivers, streams and lakes
Study Area:	statewide
Site Selection Type:	B not applicableB
Sampling Sites:	B not applicableB
Sampling Frequency:	B not applicableB
Data Collected:	Conduct reviews of water chemistry, bacteriological lab data and reports received from regulated community and contract analytical laboratories.

Program Product(s)

- ▶ *Quality Assurance Project Plan (QAPP) for Indiana Surface Water Programs*
- ▶ *General Guidance for Conducting Biomonitoring Toxicity Tests for Indiana NPDES Permits*
- ▶ *General Procedures for Aquatic Toxicity Testing and Guidelines to Develop Site-Specific Water Quality Criteria*
- ▶ *General Procedures and Guidance for Developing a Metal Translator*
- ▶ *1998 303(d) List of Impaired Waterbodies and 15 year Schedule for TMDL Development*
- ▶ *QA/QC and Toxicity Biomonitoring Review Reports*

Technical Notes

- ▶ Evaluate toxicity biomonitoring reports received from National Pollutant Discharge and Elimination System (NPDES) permittees for Whole Effluent Toxicity Testing (WETT) and prepare the Biomonitoring Review Reports.
- ▶ Evaluate toxic chemicals and/or new products for toxicity and risks to Aquatic Life and Human Health and to recommend for approval or disapproval of their use as pesticides or biocides in Indiana.
- ▶ Develop Water Quality Criteria for the NPDES program for chemicals which have no standards at state or national levels for outside the Great Lakes Basin.
- ▶ Evaluate site-specific study plans and site-specific water quality criteria proposed and developed by the permittees to assure correct water quality criteria are implemented through the NPDES program to protect the Designated Uses of Surface Waters.
- ▶ Evaluate Total versus Dissolved Metal Ratios developed and proposed by the NPDES permittees and to recommend approval or disapproval of their use in Permit Limit Calculations.
- ▶ Evaluate sediments analysis data, sediments toxicity data and develop Interim Sediment Quality Criteria for evaluation and/or remediation of contaminated sediments.
- ▶ Inspect Whole Effluent Toxicity Testing (WETT) Laboratories and Analytical Laboratories for Quality Assurance/Quality Control (QA/QC) compliance.
- ▶ Evaluate analytical contract lab proposals for analysis of environmental samples and make recommendations for selection of contract lab.
- ▶ Prepare and implement Work Plans for conducting sampling, and analysis of water samples for physical, chemical or biological target parameters for the TMDL work.
- ▶ Identify data sources for the existing data for the Impaired Waterbodies that are the 303(d) List and gather all the existing data from water, fish tissues and sediments from appropriate Watersheds for developing the appropriate TMDLs.
- ▶ Prepare presentations for the education and participation of Public and Stakeholders for TMDL development and implementation.
- ▶ Develop TMDLs, both in-house and through contract services, for the non-point and point source discharges using appropriate TMDL models.
- ▶ Conduct quality assurance of analytical data generated from analysis of environmental samples (water, sediments and fish tissue samples) and prepare the QA/QC review reports.

Contact Information

Syed Ghiasudden, Ph.D.; Toxicologist and Section Chief
Environmental Toxicology and Chemistry Section
Indiana Department of Environmental Management
Office of Water Management - Shadeland
P.O. Box 6015
Indianapolis, IN 46206-6015
(317) 308-3180
E-mail: sghiasud@dem.state.in.us

<p>IDEM Information: (317) 233-1044 or 800-451-6027 800-743-3333(TDD) toll-free for Indiana residents</p> <p>EnviroLine: (317) 232-8603 or 800-451-6027 toll-free for Indiana residents</p> <p>Fax on Demand: 800-726-8000</p> <p>Internet: www.state.in.us/idem</p>	<p><u>For More Information on IDEM's Office of Water Management...</u></p> <p>Assessment Branch (Surface water quality: river, streams and lakes) Shadeland Office, Indianapolis (317) 308-3173</p> <p>Permitting and Compliance Branch (NPDES permits, inspections, operator assistance, and compliance) Indiana Government Center North, Indianapolis (317) 232-8675</p> <p>Drinking Water Branch (Public water supply and ground water protection) Shadeland Office, Indianapolis (317) 308-3280</p> <p>Planning Branch (Water quality standards/rules, grants and loans) Indiana Government Center North, Indianapolis (317) 233-8488</p> <p>Financial Administrative Services Branch (Program management, data management, rules) Indiana Government Center North, Indianapolis (317) 232-8472</p>
--	---